



Current Epidemiology of Pneumococcal Disease, United States- 2019 updates

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Advisory Committee on Immunization Practices

June 25th, 2021

Impact of PCV13 on Invasive Pneumococcal Disease (IPD) Incidence and Serotype Distribution in the U.S.

Serotypes contained in current pneumococcal vaccines

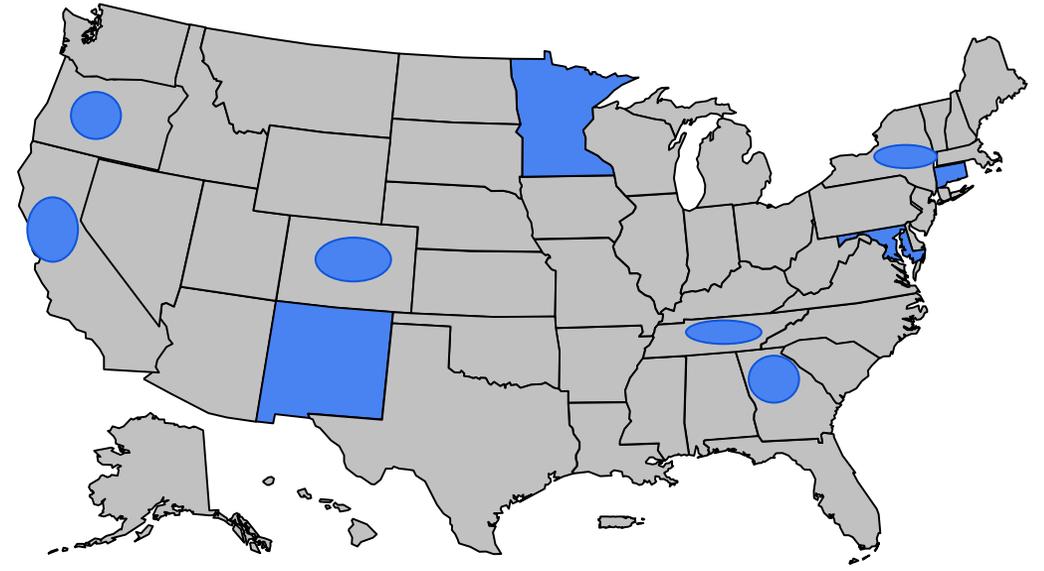
	1	3	4	5	6 A	6 B	7 F	9 V	14	18 C	19 A	19 F	23 F	2	8	9 N	10 A	11 A	12 F	15 B	17 F	20	22 F	33 F	
PCV13																									
PPSV23																									

For analysis purposes:

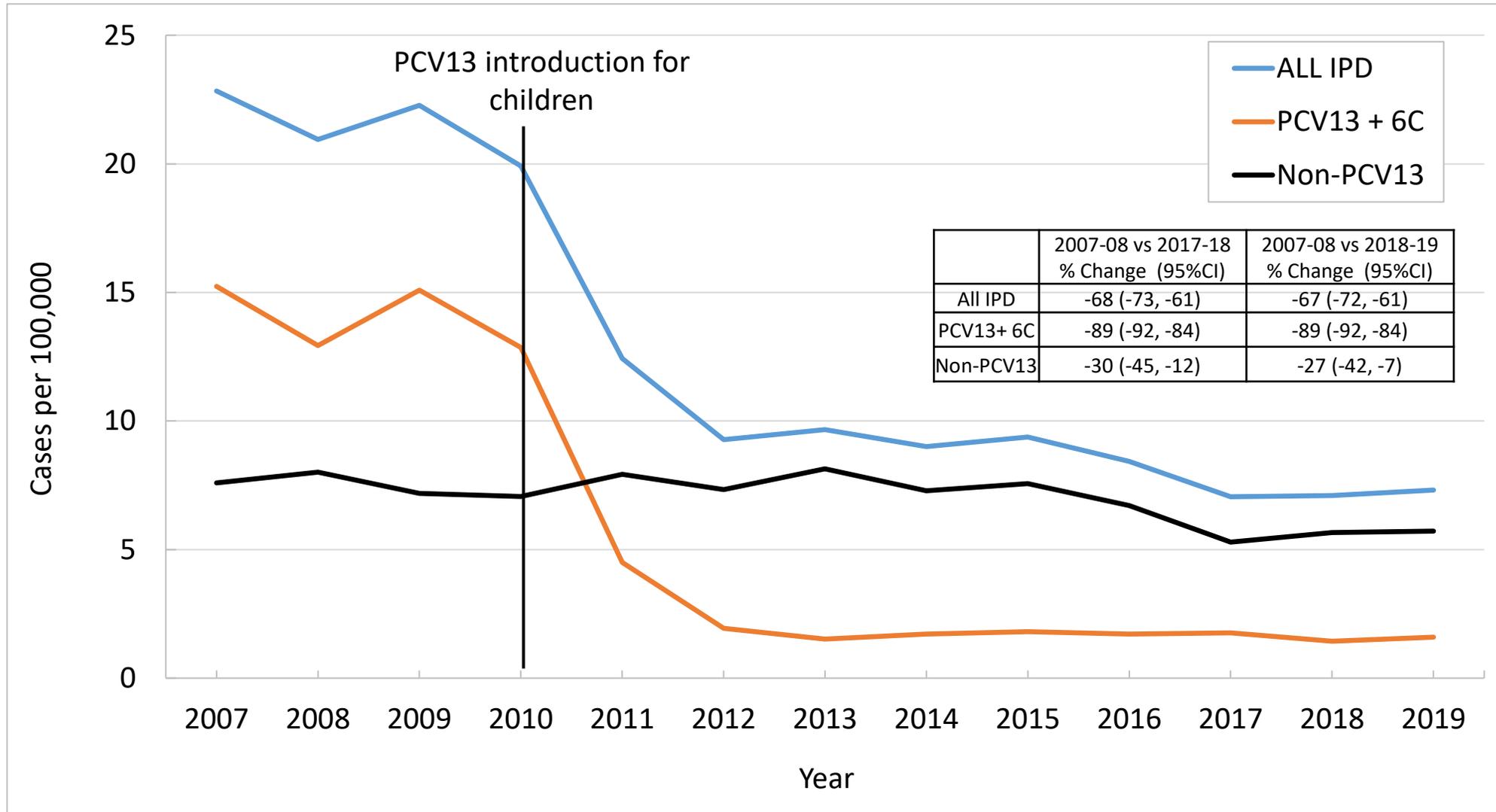
- **PCV13+6C:** Included serotype **6C** with PCV13 types due to cross protection from 6A antigen
- **PPSV23 non-PCV13:** 11 unique serotypes not in PCV13

Methods

- **Active Bacterial Core surveillance (ABCs):**
 - Active laboratory and population-based surveillance, 10 sites
 - Pneumococcus isolation from sterile site
- Isolates serotyped by whole genome sequencing, Quellung, or PCR at reference labs and grouped for analysis by vaccine type
- US Census Bureau race-bridged post-census population estimates used as denominators
- Overall and serotype-specific IPD incidence rates (cases per 100,000)

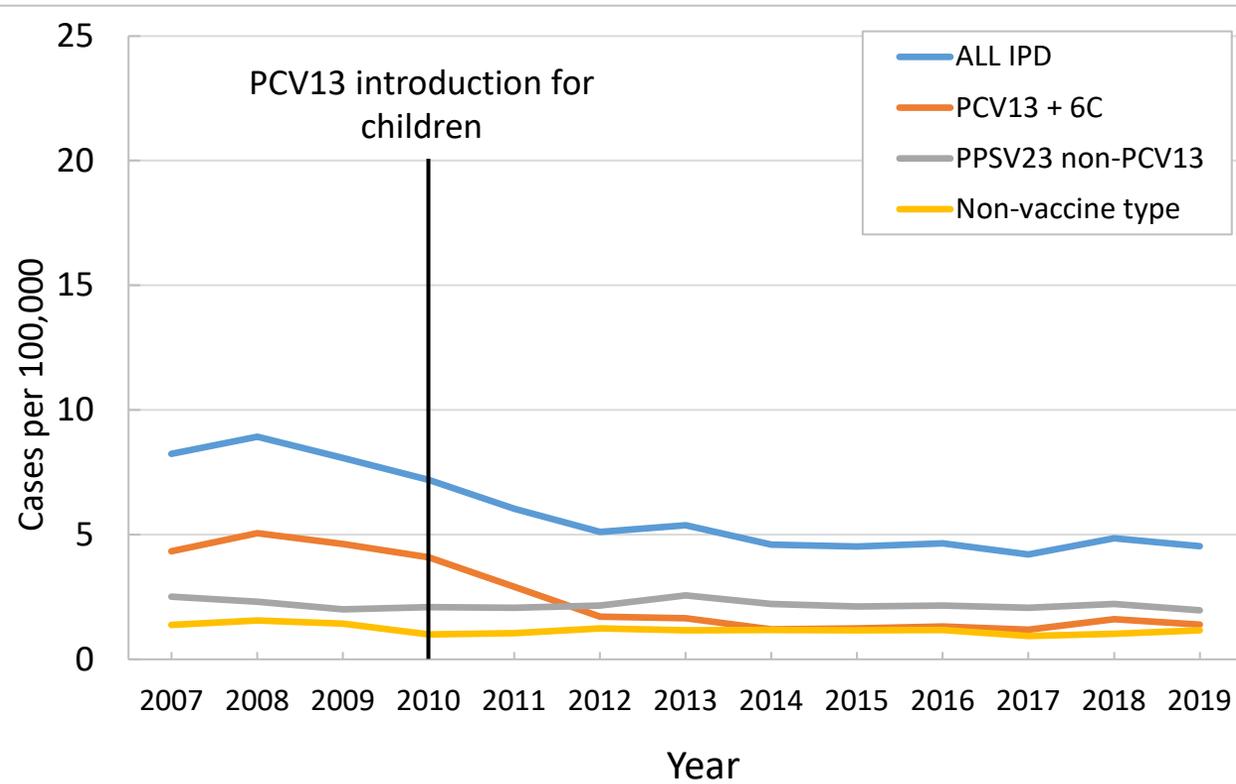


Incidence rates of invasive pneumococcal disease (IPD) among children < 5 years old, 2007 - 2019



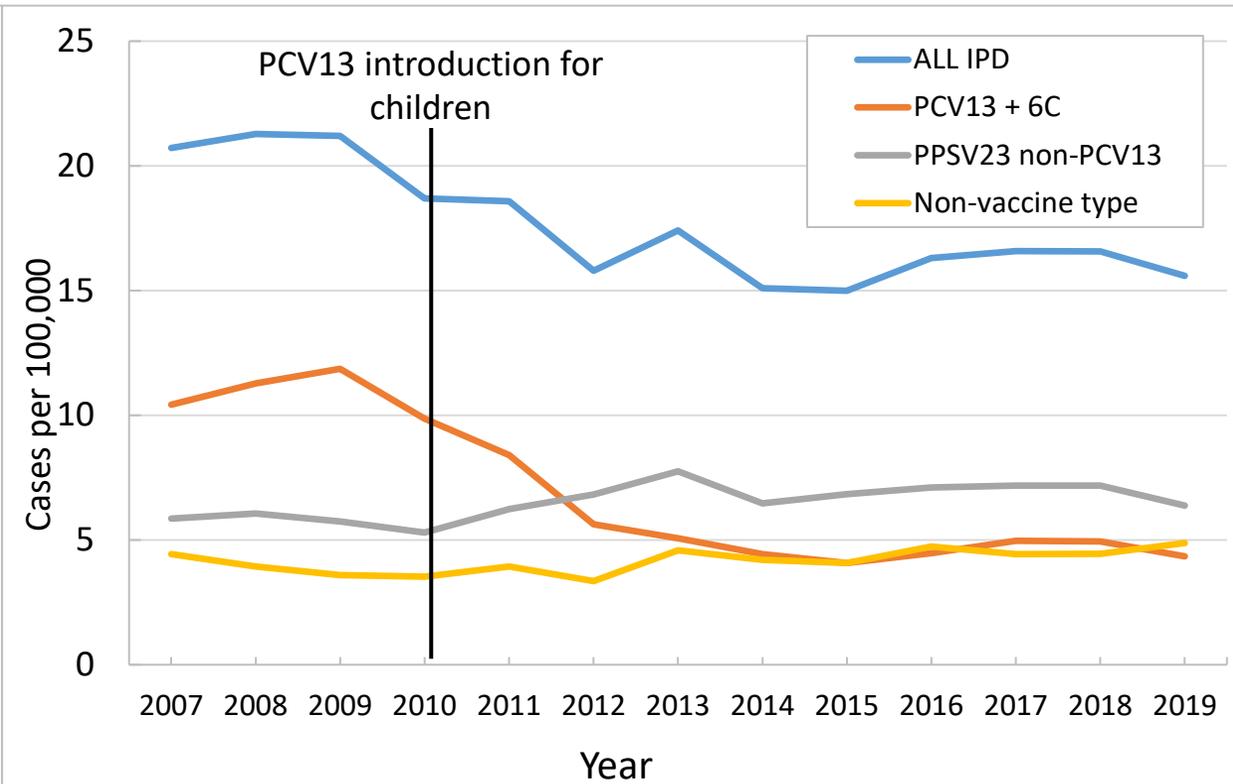
Incidence rates of IPD among adults 19-64 years old, 2007-2019

19-49 years old



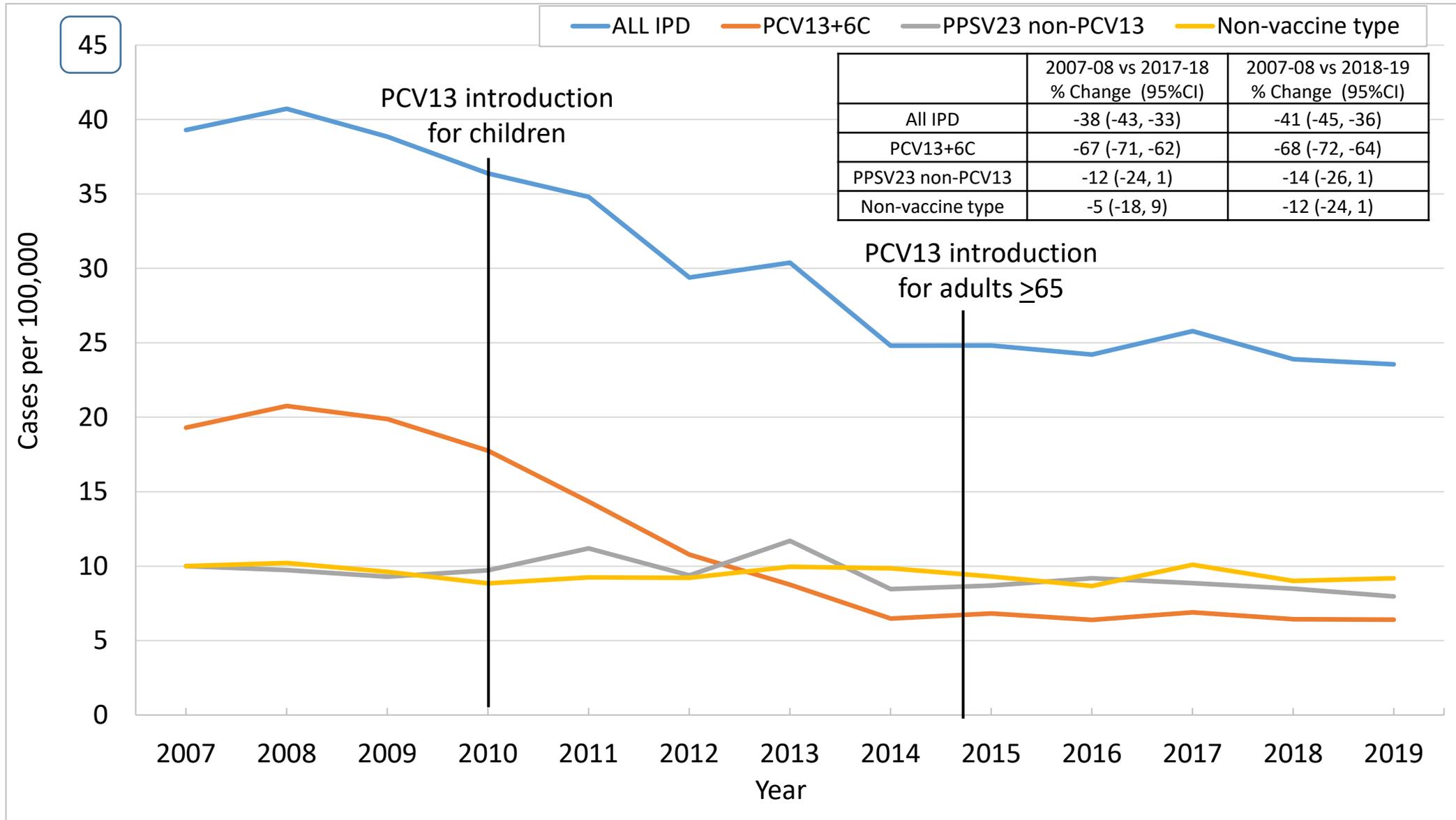
	2007-08 vs 2017-18 % Change (95%CI)	2007-08 vs 2018-19 % Change (95%CI)
All IPD	-47 (-52, -42)	-45 (-50, -40)
PCV13+6C	-70 (-75, -65)	-68 (-73, -63)
PPSV23 non-PCV13	-11 (-24, 4)	-10 (-24, 6)
Non-vaccine type	-33 (-47, -17)	-29 (-42, -13)

50-64 years old

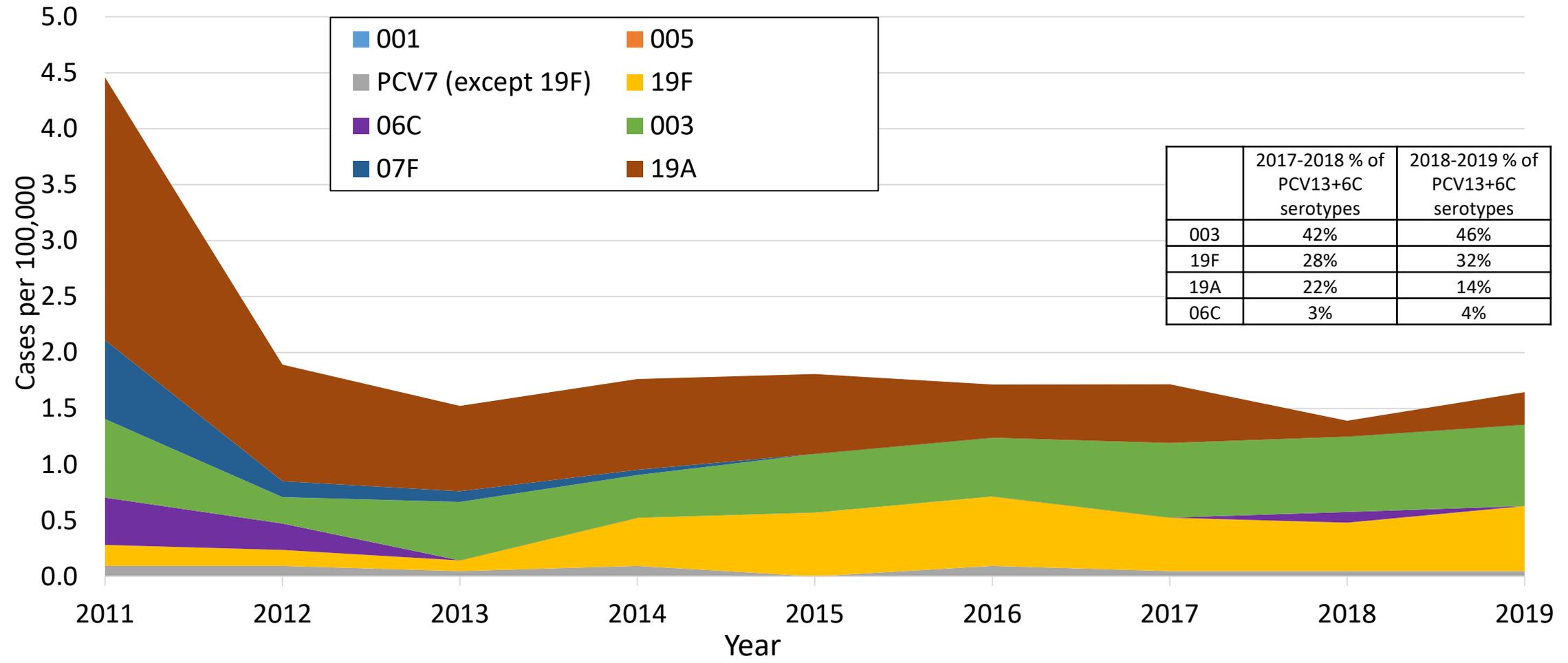


	2007-08 vs 2017-18 % Change (95%CI)	2007-08 vs 2018-19 % Change (95%CI)
All IPD	-21 (-27, -14)	-24 (-30, -17)
PCV13+6C	-55 (-60, -48)	-57 (-63, -51)
PPSV23 non-PCV13	20 (4, 39)	19 (3, 38)
Non-vaccine type	5 (-11, 26)	5 (-11, 24)

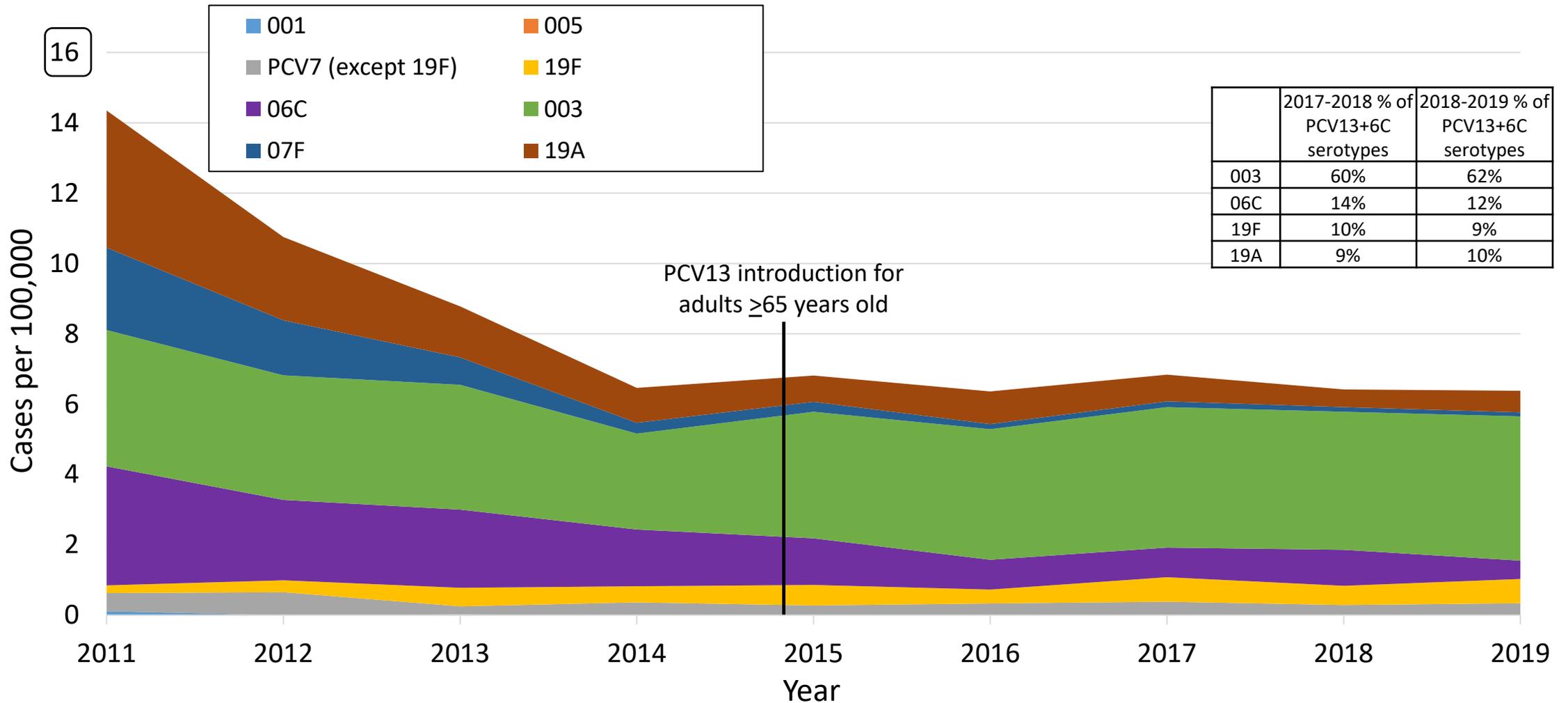
Incidence rates of IPD among adults >65 years old, 2007 - 2019



Incidence rates of IPD among children < 5 years old, 2011 – 2019, by PCV13+6C serotypes



Incidence rates of IPD among adults >65 years old, 2011 – 2019, by PCV13+6C serotypes



Remaining PCV13-type* disease among adults age 19-64 years old

- Similar trends in PCV13 serotypes observed in adults aged 19-64 years old
- Top PCV13+6C serotypes 2018-2019 (% of PCV13+6 serotypes)
 - 19-49 years old:
 - 003 (39%), 004 (26%), 19A (11%), 19F (11%)
 - 50-64 years old:
 - 003 (53%), 004 (12%), 19A (11%), 19F (11%)
- Serotype 4 increasing in recent years in adults age 19-64 years old
 - Primarily among adults experiencing homelessness¹

*Includes serotype 6C

¹Beall, et al (2020). Upsurge of Conjugate Vaccine Serotype 4 Invasive Pneumococcal Disease Clusters Among Adults Experiencing Homelessness in California, Colorado, and New Mexico, *The Journal of Infectious Diseases*

Current Pneumococcal Disease Burden Caused by Serotypes in PCV15 and PCV20

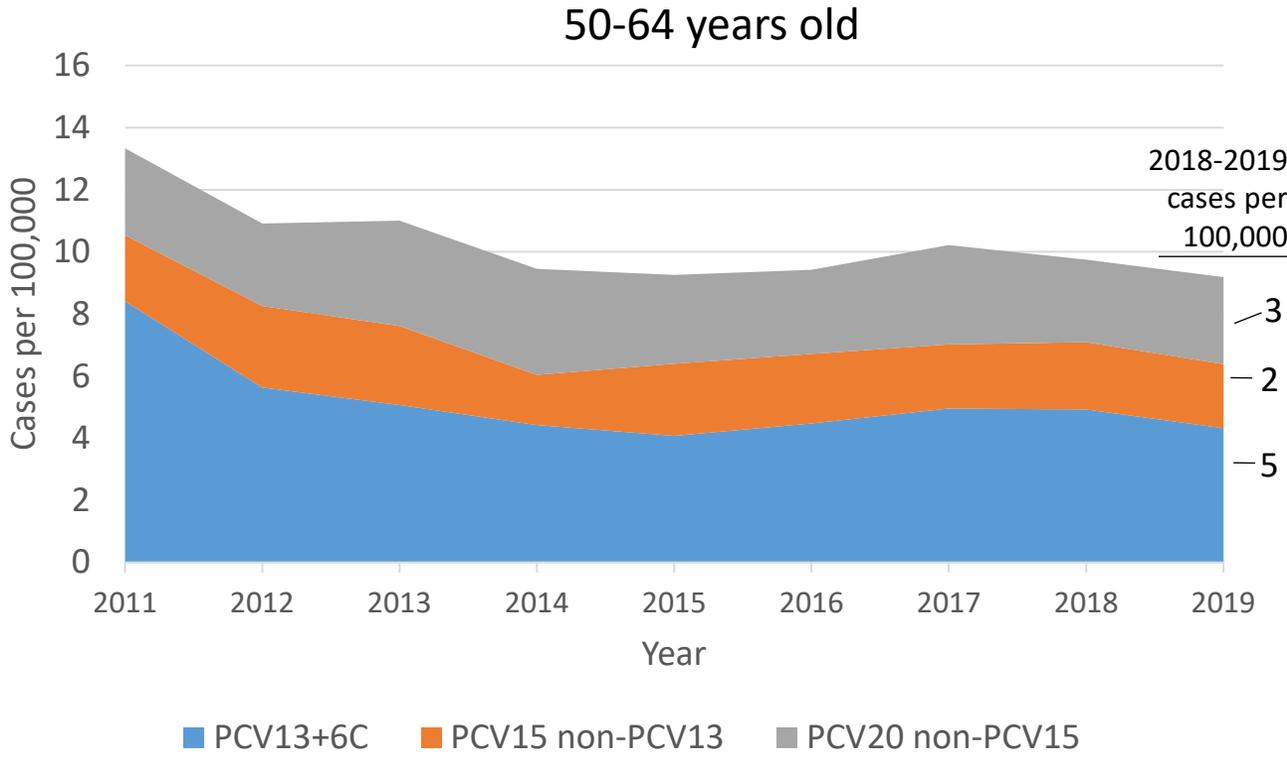
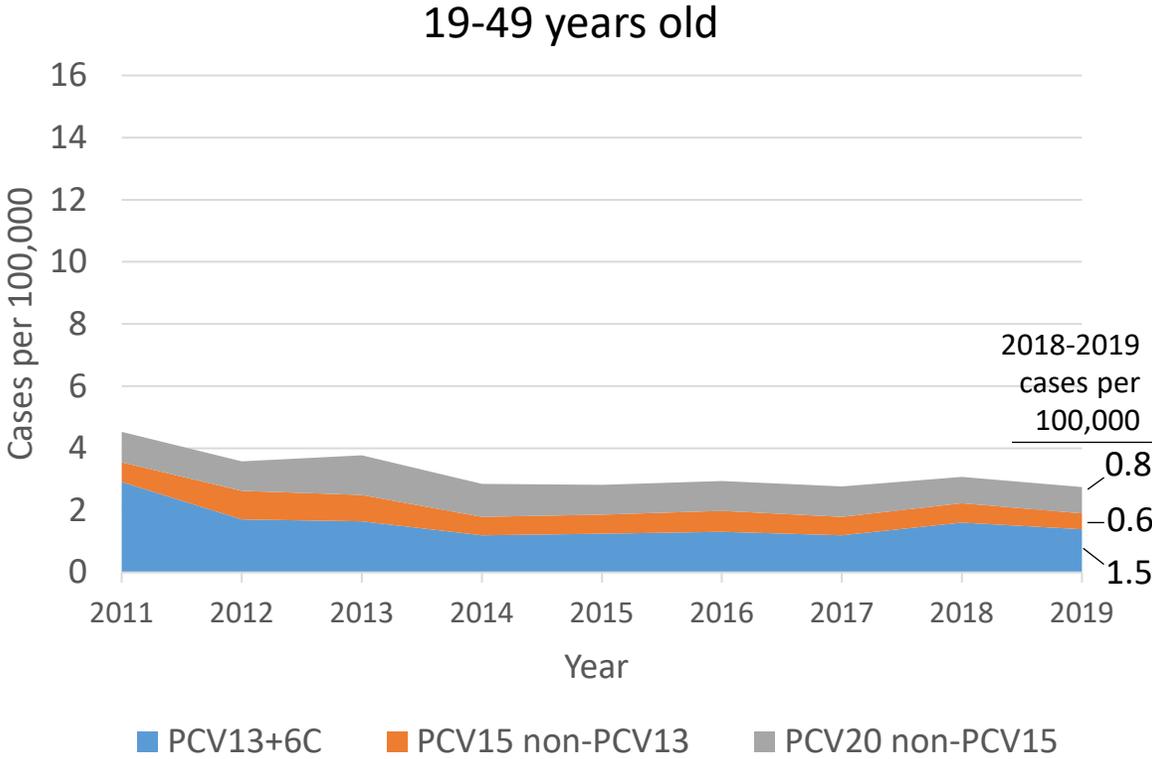
Serotypes contained in current and new pneumococcal vaccines

	1	3	4	5	6A	6B	7 F	9V	14	18 C	19 A	19 F	23 F	22 F	33 F	8	10 A	11 A	12 F	15 B	2	9N	17 F	20	
PCV13	Yellow	White	White	White	White																				
PCV15	Yellow	Green	Green	White	White	White	White																		
PCV20	Yellow	Yellow	Yellow	Yellow	White	Yellow	Green	White	White	White	White														
PPSV23	Yellow	Yellow	Yellow	Yellow	White	Yellow	Green	Orange	Orange	Orange	Orange														

For analysis purposes:

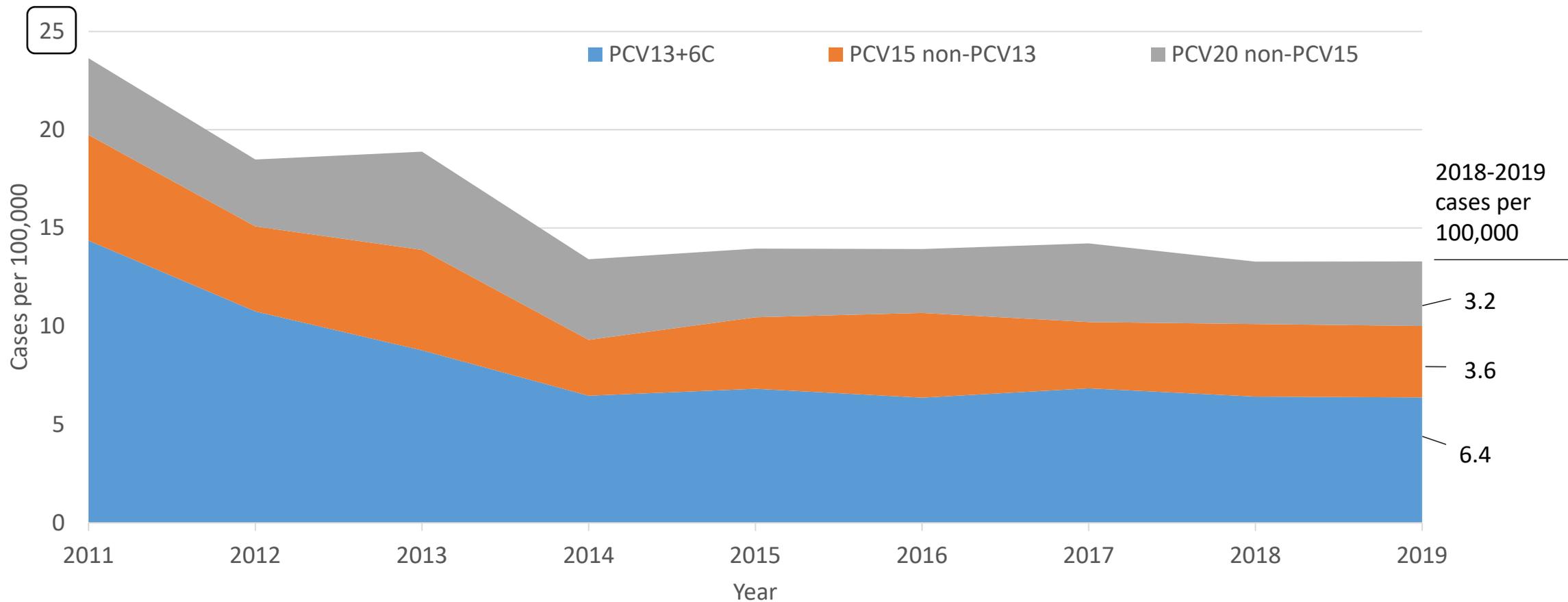
- **PCV15 non-PCV13:** includes serotypes **22F** and **33F**
- **PCV20 non-PCV15:** includes serotypes **8, 10A, 11A, 12F, and 15B/C**
- **PPSV23 non-PCV20:** includes serotypes **2, 9N, 17F, and 20**

Incidence rates of IPD among adults 19-64 years old, 2011 – 2019, by conjugate vaccine type



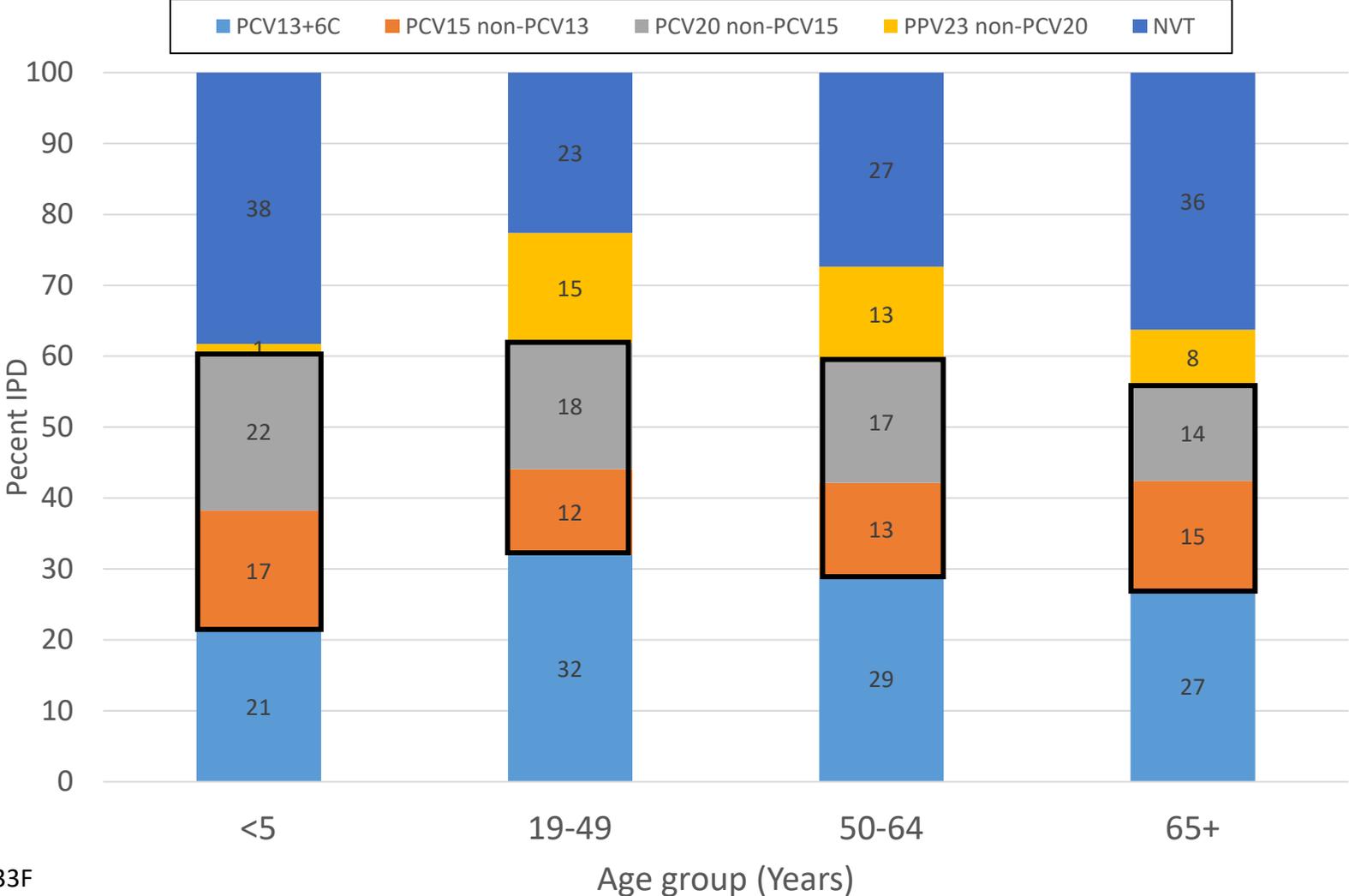
PCV15 non-PCV13 serotypes: 22F, 33F
 PCV20 non-PCV15 serotypes: 8, 10A, 11A, 12F, 15B/C

Incidence rates of IPD among adults >65 years old, 2011 – 2019, by conjugate vaccine type



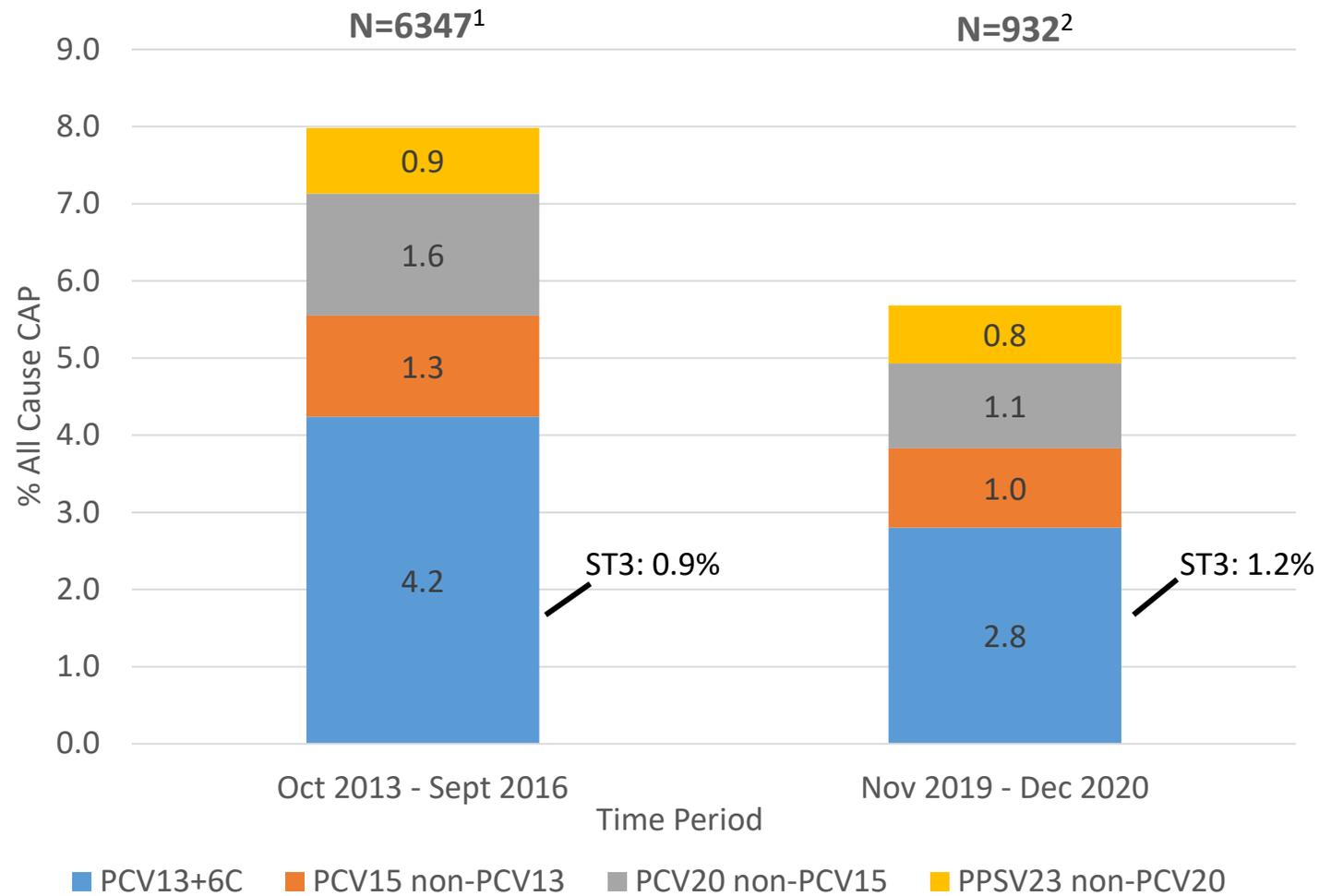
PCV15 non-PCV13 serotypes: 22F, 33F
 PCV20 non-PCV15 serotypes: 8, 10A, 11A, 12F, 15B/C

Proportion of IPD by vaccine-type and age group in 2018-2019



PCV15 non-PCV13 serotypes: 22F, 33F
 PCV20 non-PCV15 serotypes: 8, 10A, 11A, 12F, 15B/C
 PPSV23 non-PCV20 serotype: 2, 9N, 17F, 20

Pneumonia vaccine-type burden among adults ≥65 years old



US Prospective, Multicenter Surveillance Study of Hospitalized Community Acquired Pneumonia Using SSUAD, Courtesy of Pfizer, Inc.

¹Isturiz et al. CID 2021*

²Unpublished Pfizer data

*Pfizer funded study

Conclusions

- 2019 data has not changed conclusions
 - Among children and adults, overall and PCV13-type IPD incidence plateaued since 2013-2014
 - Incidence of invasive disease caused by PCV15 and PCV20 serotypes has also remained stable
 - There are opportunities to prevent additional 30% IPD burden among adults through new PCV use

Questions

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

